

[METHOD OF FABRICATING DEEP TRENCH CAPACITOR]

Abstract

A method of fabricating a deep trench capacitor is provided. A substrate with a deep trench thereon is provided. A bottom electrode is formed at a bottom of the deep trench and a capacitor dielectric layer, a first conductive layer, a protective layer and a collar layer are sequentially formed on the surface of the deep trench. The protective layer and the collar oxide layer on the surface of the first conductive layer are removed, material is deposited into the deep trench to form a material layer. A portion of the material layer is removed to form a first opening. Thereafter, collar oxide layer and the protective layer not covered by the material layer is removed. A portion of the mask layer and the protective layer on the sidewall of the first opening is removed to form a second opening. After removing the material layer, a second conductive layer and a third conductive layer are sequentially formed in the deep trench.